LET'S BUILD A TABLE TOP AIRPORT

Objectives

The students will:

Design and build a model airport.

Learn the components of an airport.

Use the model to demonstrate airport operations.

Standards and Skills

Science

Science and Technology

Science in Personal and Social Perspectives

Science Process Skills

Measuring

Making Models

Investigating

Communicating

Mathematics

Communication

Reasoning

Background

A model airport can provide students with an accurate representation of a real airport. Real airports provide a place for airplanes to takeoff and land. Many communities have small airports to serve small or general aviation airplanes.

Some cities have large airports with long runways to accommodate commercial airline service. All airports have certain things in common such as one or more *runways*, *hangars*, a wind sock, and a *taxiway*. Larger airports have parking lots and passenger terminals.

Buildings at airports serve many different purposes and needs. Buildings where airplanes are stored and maintained are called hangars. The terminal is a building where passengers can get flight information and buy tickets. Other types of businesses found at an airport may include *flight instruction*, the sale of fuel, aircraft parts, and pilot supplies.

The construction of a model airport will help students identify and understand problems that face architects and planners of real airports. Models allow planners to identify potential problems with airport location, layout, and design before expensive construction begins.

Materials

Table approximately 2 m by 1 m or larger

Small miscellaneous boxes (shoe box size)

Thin cardboard

Markers

Masking tape

Bulletin board paper

Model airplanes, cars, and trucks

Preparation

Provide a table to simulate a site in the community where students can start construction of a model airport. Multiple airport models can be constructed by teams.

Explain that an airport location requires flat terrain unobstructed by buildings, trees, and towers. Also mention that airports need to be located away from residential areas because of noise factors.

Activity

1. Cut and place a long, narrow rectangular piece of bulletin board paper on the table to represent the location of a runway. Label this component of an airport.

2. Place several model airplanes at the airport site. The model airplanes can be brought from home, made in class from paper, or cut out of magazines. Discuss with the students the potential hazard to airport operations if airplanes are parked on a runway. Ask students to suggest a safe and accessible place to park airplanes.

3. Cut and place bulletin board paper on the table to represent airplane parking ramps. Label the parking ramp. Place the model airplanes on the ramp.

4. Provide a place on the airport grounds to park the cars and trucks that bring people to the airport. Place model cars and trucks in the parking lot.

5. Small boxes can be used as buildings for the model airport. Label each type of building (terminal building, hangar) or write a business name on the building. Construct and place the hangers that will be used for airplane service, maintenance, and storage. Label the hangar.

6. Provide a facility at the airport to fuel airplanes.

7. Name the airport.
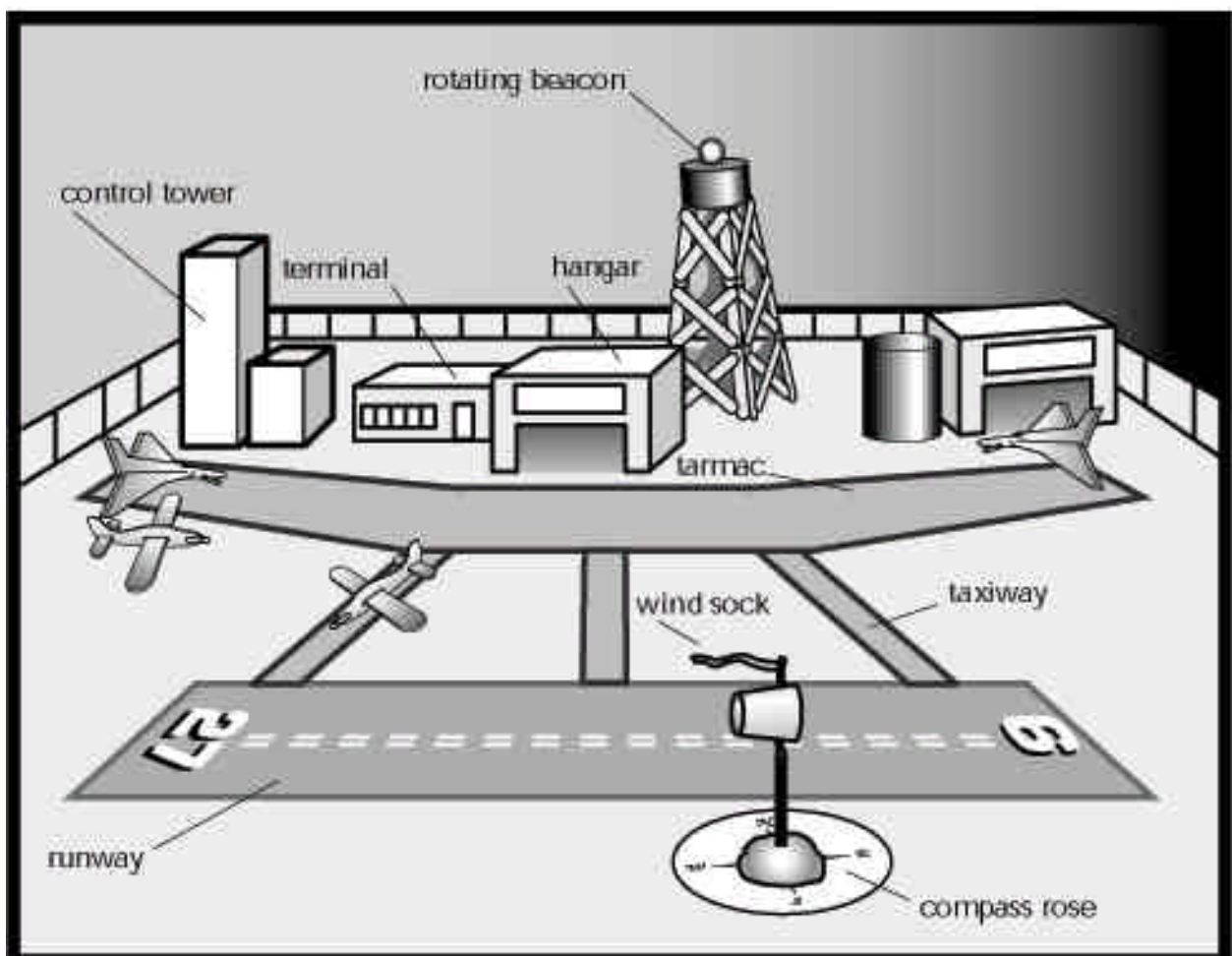
Assessment

1. Invite other students, teachers, or school officials to view and identify the model.

2. Ask a student to role-play the manager of the new model airport, providing a tour of the facility to a group of citizens. The student should use correct terminology to describe the airport.

3. Have a student simulate the first or inaugural takeoff and landing from the new airport using a model airplane. Ask the student to describe the event from a pilot's perspective.

Extensions

1. Using modeling clay, pencil, Styrofoam cup, and paper clip, build a model wind sock for the airport (see illustration).

2. Use a compass to draw a "compass rose" at the airport site.

3. Ask five (5) or more students to take off from the airport with their model airplanes. Have them "fly" to a destination in the classroom and return to the airport for landing. Ask student observers to describe what method the pilots used to avoid hitting each other. Discuss reasons why real airports designate flight patterns for pilots to use. Why is it important that pilots communicate with each other during a flight?

4. Busy airports (controlled airports) employ air traffic controllers to direct flight operations. Pilots are required to have radio contact with the control towers to receive takeoff and landing instructions. This method helps to ensure safe operations. Have a student air traffic controller direct flight operations at the model airport.

5. Runway numbers are based on magnetic direction. For example, if an airport runway is numbered 27, it is aligned in a direction of 270 degrees (it points west). Number the runways on the model airport.

6. Airplanes always try to takeoff and land into the wind. Place a small electric fan on the table to test the wind sock. Use the information from the wind sock to decide which runway to use.

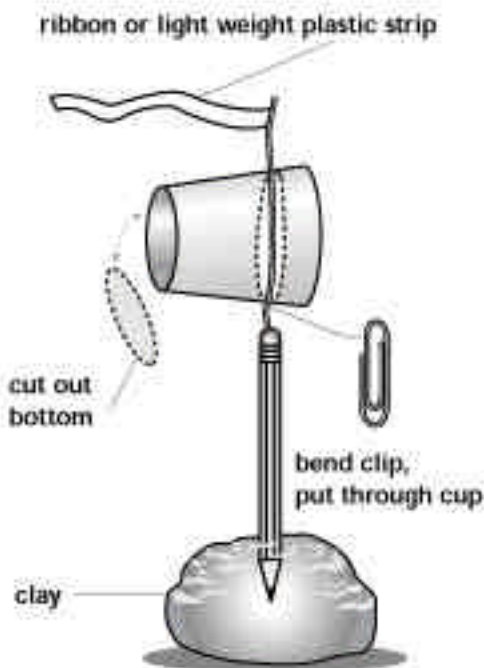7. Visit a local airport with the students to see how it is arranged.

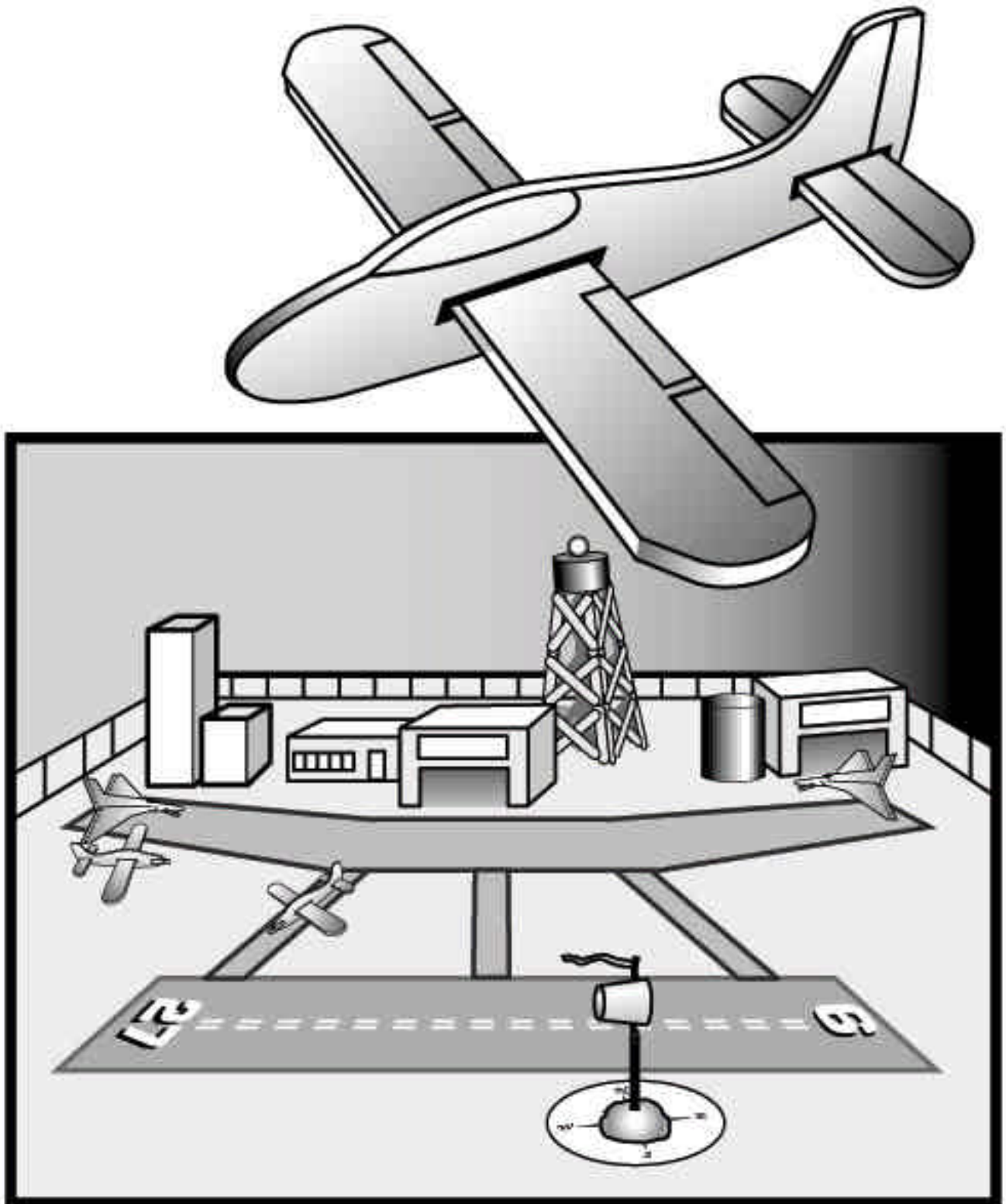ribbon or light weight plastic strip

cut out bottom

bend clip, put through cup

clay